

Aberrant New Mexican Butterflies

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Abstract. Photographs of aberrant *Plebejus acmon texanus*, *Euphilotes rita rita*, *Speyeria atlantis dorothea*, *Phyciodes campestris camillus*, *Strymon melinus franki*, *Thessalia theona thekla*, *Euphydryas anicia alena* and *Hesperia pahaska pahaska* are shown. *Limenitis astyanax arizonensis* ab. *doudorffi* is illustrated and discussed as an *arizonensis* X *L. weidemeyerii angustifascia* hybrid.

Over the 18 seasons (1964-1981) I have collected in New Mexico (Holland, 1974), it is inevitable I would encounter a number of aberrant specimens. The purpose of this article is to illustrate the more unusual New Mexican forms collected.

Figure 1 shows a male *Plebejus acmon texanus* Goodpasture with radically abnormal black markings on the ventral wing surfaces. This specimen was taken at a moist spot in a shady side canyon near Mayhill, NM, at the confluence of Cox Canyon and Wills Canyon. The dorsal surface of this specimen is normal. A number of other small blues were present at this same moist spot; when they were disturbed and took flight, the illustrated specimen immediately gave an appearance quite different from anything in my previous experience. A typical specimen is shown for comparison in Figure 1.

Figure 2 illustrates a normal female *Euphilotes rita rita* (B. & McD.) and a specimen with the ventral forewing (VFW) postmedial black spots in cells M₁ and M₂ markedly displaced distally so they fuse with the submarginal spots. The two specimens in Figure 2 were taken in a series of 20 (10♂♂ and 10♀♀); none of the others exhibited the displaced postmedial spots. The abnormality of the specimen in Figure 2 was not apparent until after capture. The dorsal surface of this specimen is normal. Leeuw (1979) has recently figured a specimen of *Satyrrium acadica acadica* (Edwards) which is remarkably similar to the aberrant *P. acmon texanus* shown here in Figure 1. On the basis of three examples in three different species, one could speculate that lycaenids may have a tendency towards atypical expression of the postmedial and submarginal spots ventrally.

Figure 3 illustrates male and female *Speyeria atlantis dorothea* Moeck which show grossly enlarged silvering of the basal part of the ventral

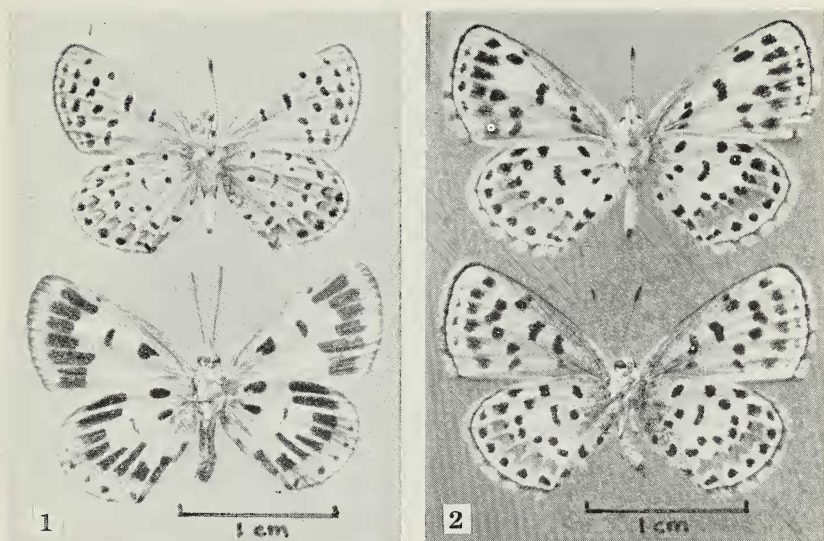


Fig. 1. *Plebejus acmon texanus* ventral surface:

Top, normal ♂, 27 Aug. 75, Curtis Canyon Dam, Sacramento Mts., nr. Mayhill, Otero Co., NM, 6600' (2000 m), leg. R. Holland.

Bottom, aberrant ♂, 20 May 75, confluence of Cox Canyon and Wills Canyon, Sacramento Mts., nr. Mayhill, Otero Co., NM, 6500' (2000 m), leg. R. Holland.

Fig. 2. *Euphilotes rita rita* ventral surfaces:

Top, aberrant ♀.

Bottom, normal ♀, both specimens 1 Sept. 80, 1 mi. E. of Organ, San Augustin Pass, Organ Mts., Dona Ana Co., NM, 5500' (1650 m), leg. R. Holland & J. McCaffrey.

hindwing (VHW). This figure also shows normal specimens for comparison. The aberrant specimens were taken 14 days and five miles (eight km) apart. It is thus doubtful, but not impossible, they were from the same brood. Of some 50 other *dorothea* taken during 1966-68 on Mt. Taylor, NM, no other aberrant examples appeared, nor have I ever seen a similarly silvered *atlantis* (Edwards) of any subspecies from elsewhere. Due to the double occurrence of this aberration, it is tempting to attribute its cause to some recessive allele which is present with very low frequency in the Mt. Taylor population of *dorothea*. In flight, such specimens were not distinguishably abnormal, nor are their dorsal surfaces.

Figures 4 and 5 show what is probably an extreme melanistic of *Phyciodes campestris camillus* Edwards, although the specimen may be *Phyciodes mylitta arizonensis* Bauer. (Both species were present in numbers at the time and place that this specimen was captured.) Note that even the

forewing shape is abnormal. Instead of having the usual convex or straight outer margin, this specimen has the margin slightly concave at Cu_1 . The specimen is a male. A normal *P. campestris camillus* is also shown in these figures.

Figures 4 and 5 also show a normal male *Strymon melinus franki* Field and a male of the form which has been called *meinersi* Gunder. In this form, the normally orange-red "thecla spot" in cell Cu_2 on both surfaces of the hindwing is pale yellow. The usual orange-red marking at the anal angle is also pale yellow, as well as reduced in area. (In the specimen illustrated, a part of the anal angle has been lost from both wings, especially the right.)

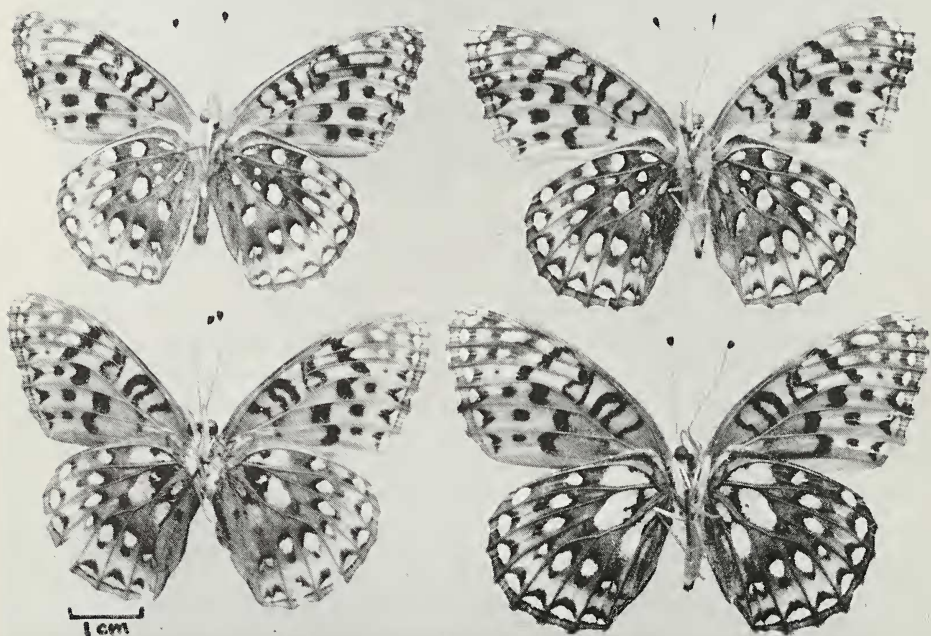


Fig. 3. *Speyeria atlantis dorothea* ventral surfaces:

Top left, normal ♂, 19 July 68, 1 mi. S. of La Mosca Outlook, Mt. Taylor, Valencia Co., NM, 10,300' (3150 m), leg. R. Holland.

Top right, normal ♀, 16 July 66, San Mateo Spr., San Mateo Canyon, Mt. Taylor, Valencia Co., NM, 8800' (2700 m), leg. R. Holland.

Bottom left, aberrant ♂, 30 July 66, Tapia Canyon, Mt. Taylor, Valencia Co., NM, 9300' (2850 m), leg. R. Holland.

Bottom right, aberrant ♀, 16 July 66, La Mosca Canyon, Mt. Taylor, Valencia Co., NM, 9800' (3000 m), leg. R. Holland.

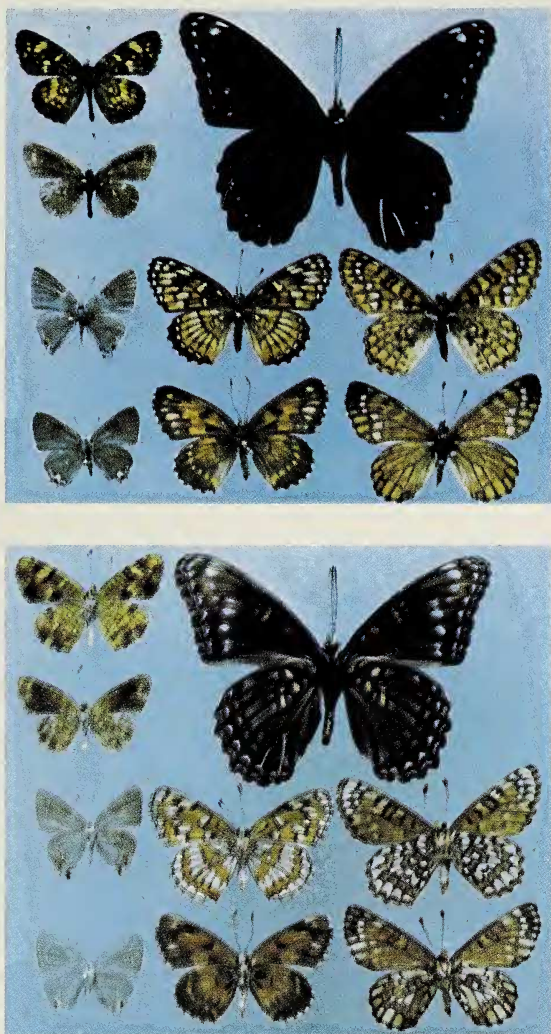


Fig. 4. Dorsal surfaces, all specimens except as noted leg. R. Holland:
 Upper left, normal ♂, *Phyciodes campestris camillus*, 18 Aug. 68, 1 mi. W. of
 New Canyon C. G., Manzano Mts., Torrance Co., NM, 8200' (2500 m).
 Left next to top, extreme aberration ♂, *Phyciodes campestris camillus* (?),
 same data as specimen above.
 Left next to bottom, normal ♂, *Strymon melinus franki*, 30 July 68, 2 mi. S.
 of New Canyon C. G., Manzano Mts., Torrance Co., NM, 7400' (2250 m).
 Bottom left, aberration *meinersi* ♂, *Strymon melinus franki*, 3 mi. W. of
 Sanostee, Chuska Mts., San Juan Co., NM, 5500' (1650 m).

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Oddly, the *meinersi* specimen has the postmedian band inwardly suffused with the normal *melinus* (Huebner) orange-red on the VHW, although the amount of suffusion is greatly reduced. The VFW postmedian line suffusion on the *meinersi* specimen is completely absent. Similarly, the *meinersi* specimen has the tip of the antenna club a normal *melinus* orange-red.

In addition to the figured specimen, I have a female *meinersi* taken in poor condition at New Canyon, 7400' (2300 m), Manzano Mts., Torrance Co., NM, 30 July 68, leg. R. Holland. Normal *melinus* may have the abdomen either grey or with the last four segments orange-red. The figured *meinersi* has a grey abdomen; the unfigured *meinersi* has the last four abdominal segments dorsally white.

In April, 1974, at Alamo Canyon, near Alamogordo, NM, there was a great population explosion of *Thessalia theona thekla* (Edwards). Figures 4 and 5 also show a female taken at this time with the normal *theona* (Menetries) pattern almost completely obliterated. The normal form is also illustrated. The complete brown occlusion of the normal VHW basal, medial and marginal pearlish bands is especially striking. The marginal pearlish band normally present on the VFW is similarly occluded. Typically, the dorsal surface of *theona thekla* is tricolored: chocolate, light fulvous and dark fulvous, with each color fairly sharply delineated. In the aberrant specimen, the chocolate and dark fulvous are not at all sharply delineated, and the light fulvous is completely absent except for a row of submarginal smudges on the forewing. The usual ventral *theona thekla* pattern is also tricolored: chocolate, dark fulvous and pearl, with the pearl bands sharply set off into rectangular spots by chocolate scaling on the veins. In this specimen, however, there is almost no pearl ventrally, and certainly no hint of chocolate scaling on the veins. In normal *theona thekla*, the ventral surface is not a particularly close replica of the dorsal surface. However, the two surfaces are quite alike in this aberration. No other *theona thekla* aberrations were seen in this population explosion.

Figures 4 and 5 additionally illustrate a female *Euphydryas anicia alena* Barnes & Benjamin with the following abnormalities: the apex of both surfaces of the forewings are unusually blackened; the usual transverse basal and discal DFW and DHW black markings are absent; and the medial and basal markings of the VHW are peculiar in having elongated pearly spots, especially in cells SC and Cu₂. *Euphydryas* species in general appear to produce more frequent aberrant individuals than most other genera, e.g., the forms figured in Comstock (1927). Indeed, I have another aberrant *alena* from the same place. Normal *alena* is given in this figure as well.

Finally, Figures 4 and 5 illustrate a male of what has been called *Limenitis astyanax arizonensis* ab. *doudoroffi* (Gunder). Perkins and Garth (1972) assert that the entity is almost certainly a hybrid between *L. weidemeyerii* Edwards and *L. astyanax* (Fabricus).

Neither *astyanax* nor *weidemeyerii* are frequently encountered in the Sacramento Mts. of southeastern New Mexico. Small *L. astyanax arizonensis* colonies exist in at least two riparian canyons (Alamo Canyon and Three Rivers Canyon) on the west slope of this range around 5500 to 6500' (1700 to 2000 m). The Three Rivers location is also the source of the subject *doudoroffi* specimen. *Limenitis weidemeyerii* is even rarer in the Sacramentos; I have a single specimen taken near the summit of Sierra Blanca at 11,000' (3300 m), about five miles (eight km) from where the subject specimen was captured. The single Sierra Blanca *weidemeyerii* specimen appears to be ssp. *angustifascia* (B. & McD.), although Perkins and Perkins (1975) indicate the Sacramento Mts. to be closer to the known range of typical *weidemeyerii*. (Evidently Perkins and Perkins (1975) had very scant Sacramento Mts. *weidemeyerii* available. In any event, my single *weidemeyerii* specimen forms an uncertain basis for determining which subspecies inhabits the Sacramento Mts. so tenaciously.)

Perkins and Garth (1972) illustrate an example of *doudoroffi* from the Allen Hancock Foundation (AHF), and mention the existence of three other specimens, one in the Los Angeles County Museum (LACM), one taken by Bauer, and the type taken by M. Doudoroff. All four of these specimens are from Arizona, where the *weidemeyerii* subspecies would unquestionably be *angustifascia*, the same subspecies which appears to exist in the area where this *doudoroffi* specimen was taken. The present specimen differs only in very minor ways from that illustrated by Perkins and Garth: On the DFW it has only two, not three or four subapical white spots; and the whitish median band on the VFW anterior to M₂ is more expressed.

Perkins and Garth indicate that their *doudoroffi* specimen, like the one illustrated here, has furruginous scales suffusing the apex of the VFW. They maintain that, in this trait, it resembles *astyanax arizonensis*, and that in *weidemeyerii angustifascia* the corresponding suffusion is black. However, my Sierra Blanca *weidemeyerii* has the area suffused with ferruginous scaling as extensively as the *doudoroffi*. Indeed, approximately half the *weidemeyerii* I have seen from New Mexico have at least some ferruginous scaling in this area, although the Sierra Blanca specimen is the most extensively so scaled.

Hybridization among *Limenitis* species is widely documented; see, for example, Shapiro and Biggs (1968), Perkins and Gage (1970), Gage (1970), Hovanitz (1949), Simpson and Pettus (1976), and Platt, Rawson and Balogh (1978). Due to the extreme scarcity of both *weidemeyerii* and *astyanax* in the Sacramento Mts., it is easy to postulate a female of one species accepting courtship from the most nearly eligible male to be found—even if that male was of the other species. In any event, I am fully convinced that the question mark of Perkins and Garth (1972) can now be removed, and ab. *doudoroffi* can be recognized as a *weidemeyerii* X

astyanax arizonensis hybrid. Such recognition is, of course, without nomenclatorial significance, because aberration and hybrid names do not have code standing.

After the initial submission of this article, a very baffling female *Hesperia* was captured on the south slope of the Capitan Mts. in Lincoln Co., NM. The entire VHW of this specimen, which is shown in Figure 6, is immaculate—a condition not characteristic of any *Hesperia*. At the same time and place, *Hesperia pahaska pahaska* Leussler (common) and *H. uncas uncas* Edwards (occasional) were flying. *Hesperia viridis* (Edwards) had been taken nearby earlier in the season. The aberrant specimen was immediately recognizable as peculiar in the field. In fact, I first missed a sitting shot while the insect was nectaring at a thistle. Upon returning to the same thistle four hours later, I was rewarded by finding the striking



Figure 6

Hesperia pahaska pahaska
ventral surfaces:

Top, aberrant *pahaska* (?) ♀, 26 July 80, Peppin Canyon, S. slope, Capitan Mts., nr. Capitan, Lincoln Co., NM, 7000' (2150 m), leg. R. Holland.

Middle, intermediate *pahaska* ♀, 14 June 80, road S. of Capitan Gap at National Forest boundary, Capitan Mts., Lincoln Co., NM, 6500' (2000 m), leg. R. Holland.

Bottom, normal *pahaska* ♀, 27 July 80, Pierce Canyon, S. slope Capitan Mts., nr. Capitan, Lincoln Co., NM, 6300' (1900 m), leg. R. Holland.

Hesperia had also returned. Later examination of *H. p. pahaska* from this locality revealed a female specimen with VHW markings greatly reduced, but not completely missing. It is on the basis of this intermediate specimen and the general abundance of *pahaska* in the area that I concluded the immaculate specimen is probably also *pahaska*. The intermediate specimen and a typical *pahaska* female are also illustrated in Figure 6.

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Upper right, *Limnitis astyanax arizonensis* aberration *doudoroffi* = *L. weidemeyerii* X *L. astyanax arizonensis* ♂, 23 June 75, Three Rivers C. G., nr. Carrizozo, Sacramento Mts., Lincoln Co., NM, 6500' (2000m).

Center, normal ♀, *Thessalia theona thekla*, 30 Apr. 74, W. slope of San Augustin Pass, 18 mi. E. of Las Cruces, Organ Mts., Dona Ana Co., NM, c. 5500' (1650 m), leg. G. S. Forbes.

Bottom middle, aberrant ♀, *Thessalia theona thekla*, 28 Apr. 74, Alamo Canyon, nr. Alamogordo, Sacramento Mts., Otero Co., NM, 5500' (1650 m).

Middle right, normal ♀, *Euphydryas anicia alena*, 16 May 76, Grasshopper Spr., nr. Ramah, Zuni Mts., McKinley Co., NM, 7500' (2300 m).

Bottom right, aberration ♀, *Euphydryas anicia alena*, same data as specimen above.

Fig. 5. Ventral surfaces of specimens in Fig. 4.